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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WOLLSCHLAGER, JEFFREY MICHAEL	
ART UNIT	PAPER NUMBER
1791	
MAIL DATE	DELIVERY MODE
12/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/507,311	WEHRSPOHN ET AL.	
	Examiner	Art Unit	
	Jeff Wollschlager	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-74* is/are pending in the application.

4a) Of the above claim(s) *36-74* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, claims 1-35, in the reply filed on September 18, 2007 is acknowledged. Claims 36-74 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected election, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 18, 2007.

Response to Amendment

Applicant's amendment to the claims filed September 18, 2007 has been entered. Claims 1, 2, 6, 7, 9-12, 14-27, 29-32, and 35 are currently amended. Claims 36-74 have been withdrawn from further consideration. Claims 1-35 are under examination.

Specification

The disclosure is objected to because of the following informalities: the arrangement of the specification is incomplete. Appropriate correction is required.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.

(f) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5, 9-11, 13, 15, 16, 18, 22, 23, 25-28, 31, 32, 33 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, the limitation, "at least 30% above the solidification temperature" is unclear as to its limiting effect because 30% is different depending on the unit of temperature employed (e.g. K or °C).

Regarding claims 9, 10, 15, 16, 18, 22, 23, 25-28, A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or

doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, the claims recite a broad recitation followed by a "preferred" recitation which is the narrower statement of the range/limitation.

Regarding claim 11, the claim recites the "filled template" whereas the claims from which this claim depends require the pores of the template are not filled. Additionally, the last line of the claim recites "the melt", which lacks antecedent basis in the claims. Further, the examiner notes that any cooling rate employed can be reasonably considered a selected cooling rate.

Regarding claim 13, "the induction of segregation" lacks antecedent basis in the claims. The examiner notes that what does or does not reasonably meet the scope of the claim is unclear. Appropriate correction and clarification is required. For the purposes of examination, and as supported by dependent claim 15, at least evaporation of a solvent is understood to meet the scope of the claim.

Regarding claim 31, the recitation "polyterephthalates such as polyethylene terephthalate or polybutylene terephthalate" renders the scope unclear since it is unclear whether all polyterephthalates are intended or whether the named materials alone are intended. Further, the recitation "organic polymers, such as" followed by a specific list is unclear for the same reason. Additionally, the claim recites in step (ii), "for example" which renders the intended scope of the claim unclear.

Regarding claim 32, the claim recites particular materials in steps (i) and (ii), but then provides a broad recitation of "another main group or transition metal". It is unclear what materials are intended to be encompassed by the claim, all metals or the particular metals

listed. Additionally, step (b) refers to "the organometallic compound". It is unclear to what this recitation positively refers and whether it is required for all embodiments of the claim or only step (a) (ii), if applicable.

As to claims 33 and 34, the claims recite "for example". It is unclear what transformation is positively required by the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 4, 6-9, 12-15, 17, 20, 21-31 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Cepak et al. (Preparation of Polymeric Micro- and Nanostructures Using a Template-Based Deposition Method, Chem. Mater, 1999, 11, 1363-1367).

Regarding claim 1, Cepak et al. teach a method of forming polymeric microtubules or solid nanofibrils by introducing a polymeric solution into the pores of a microporous template. The solvent is evaporated from the solution and depending on the size of the pores; either a hollow or solid fiber is formed. The examiner notes that from the teaching of Cepak et al. it is understood that in the cases where a hollow fiber is formed (i.e. larger diameter pores) the polymeric solution inherently does not fill the pores completely, otherwise a solid fiber would be

formed from the polymeric solution. (Abstract; page 1363-1364; page 1365, second column – 1366, first column).

As to claims 3 and 4, Cepak et al. also teach it is known to employ melts with template synthesis (Introduction).

As to claim 6, the polymeric melt would be cooled necessarily to produce a solidified final hollow tube.

As to claim 7, Cepak et al. employ a polymeric solution (Experimental Section).

As to claim 8, Cepak et al. teach the polymer is solidified by evaporation of the solvent (page 1364, first column).

As to claim 9, Cepak et al. disclose polymers with a molecular weight of 534,000 (Experimental Section).

As to claims 12-15, Cepak et al. teach the solvent is evaporated. This is a phase transition process and meets the limitation of the claims as supported by the recitation of evaporation of a volatile component in claim 15 (page 1364, first column).

As to claim 17, Cepak et al. employ the same claimed process steps with the same claimed materials. Accordingly, the same claimed effects are realized.

As to claim 20, Cepak et al. teach the solvent is evaporated/extracted from the hollow fiber (page 1364, first column).

As to claims 21-28, Cepak et al. disclose the same template materials as those disclosed in the instant specification (e.g. alumina membrane). Accordingly, the examiner concludes that the templates have the same properties (page 1366, column 1).

As to claim 29, Cepak et al. disclose the same template materials and disclose that the solution is fed into one end and evaporated out of the other end (Experimental Section).

As to claim 30, Cepak et al. exemplify membranes with pore diameters of 1 um and 400 nm that produce hollow fibers. Accordingly, it necessarily follows that the wall thickness is less than the values recited in the claim.

As to claim 31, Cepak et al. disclose polystyrene, as well as various other polymers (Experimental Section).

As to claim 35, Cepak et al. dissolve the template (page 1364, second column) with a solvent.

Claims 1, 2, 7, 8, 12-17, 20-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Sneddon et al (US 6,478,994).

Regarding claims 1 and 2, Sneddon et al. teach a method of producing a ceramic hollow fiber/nanocylinder from a polymeric precursor wherein a polymeric material dissolved in an organic solvent and/or melted (col. 3, lines 20-36) is applied to the walls of a porous template, without completely filling the pores (col. 10, lines 22-50; col. 15, lines 7-16). The precursor is pyrolyzed to remove the polymeric material and convert the precursor into a boron based ceramic (col. 7, line 26 - col. 8, line 9). Finally, the porous template is dissolved to free the nanocylinders (col. 14, lines 36-52).

As to claim 7, Sneddon et al. teach that a solution method may be employed (col. 10, lines 26-31).

As to claim 8, Sneddon et al. pyrolyze the precursor which removes the material (col. 7, lines 27-42; col. 9, lines 62-65).

As to claims 12-16, Sneddon et al. pyrolyze the precursor material which includes polymers and carriers/organic solvents (col. 10, lines 21-50; col. 7, lines 26-57; col. 5, lines 42-17).

As to claim 17, Sneddon et al. employ the same claimed process steps with the same claimed material. Accordingly, the same claimed effects are intrinsically realized (e.g. porous).

As to claim 20, Sneddon et al. employ a solvent and a polymer as precursor materials. The precursor materials are pyrolyzed (col. 3, lines 31-40; col. 7, lines 26-40).

As to claim 21, Sneddon et al. employ an alumina membrane that produces a parallel array of fibers (col. 14, lines 36-62).

As to claims 22-29, Sneddon et al. employ the same membrane materials as that which are disclosed in the instant specification to produce fibers of the same size (col. 14, lines 36-col. 15, lines 16; col. 10, lines 22-50; Figure 4A-4E).

As to claim 30, Sneddon et al. produce fibers with the same wall thickness (col. 10, lines 21-50; col. 14, lines 36-col. 15, line 16).

As to claim 31, Sneddon et al. disclose polysilanes (col. 5, lines 42 – col. 6, lines 16).

As to claim 32, Sneddon et al. disclose silicon containing materials may be employed (col. 5, lines 42-col. 6, line 16).

As to claims 33 and 34, Sneddon et al: transform the metal containing compound into a ceramic (Abstract).

As to claim 35, Sneddon et al. remove the template, by dissolved/etched (col. 10, lines 21-50).

Claims 3-6 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sneddon et al (US 6,478,994).

As to claim 3, Sneddon et al. disclose immersing the alumina membrane in a "liquid" precursor but do not expressly state what form the liquid is in (col. 10, lines 33-50; Figure 4). Sneddon et al. also teach the precursor "can be dissolved in various organic solvents and/or

melted" (col. 3, lines 30-40). From this disclosure in the reference, the examiner concludes that Sneddon et al. anticipate the claim.

In an alternative interpretation, the examiner notes that Sneddon et al. only exemplify a melt spinning technique that is different from the porous template technique. However, the examiner submits in this alternative interpretation regarding the teaching of the reference that it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed a precursor dissolved in an organic solvent and/or melted since the reference suggests and implies the interchangeability, combinability, and equivalence of dissolving and melting the precursor. (MPEP 2144.06-2144.07).

As to claims 4-6, the polymeric melt disclosed by Sneddon et al. is intrinsically above the solidification temperature of the mixture and is solidified by cooling. As to claim 5, it is noted that the temperature of the melt would have been readily optimized as is routinely practiced in the art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 4, 6-9, 12-15, 17, 18, 20, 21-31 and 35 are rejected under 35 U.S.C. 103(a) as being obvious over Cepak et al. (Preparation of Polymeric Micro- and Nanostructures Using a Template-Based Deposition Method, Chem. Mater, 1999, 11, 1363-1367) in view of Moro et al. (US 5,292,515).

Regarding claims 1 and 18, Cepak et al. teach a method of forming polymeric microtubules or solid nanofibrils by introducing a polymeric solution into the pores of a microporous template. The solvent is evaporated from the solution and depending on the size of the pores; either a hollow or solid fiber is formed. The examiner notes that from the teaching of Cepak et al. it is understood that in the cases where a hollow fiber is formed (i.e. larger diameter pores) the polymeric solution inherently does not fill the pores completely, otherwise a solid fiber would be formed from the polymeric solution. (Abstract; page 1363-1364; page 1365, second column – 1366, first column).

In an alternative interpretation of Cepak et al., although the examiner submits it is inherent as set forth above, Cepak et al. do not positively state the pores are not filled. However, Moro et al. teach a method of producing plastic cartridges (i.e. elongated cylindrical articles) having a relatively small diameter (col. 18, lines 38-57) wherein the mold (i.e. template) is not filled and is rotated at speeds of the order of 2150 rpm (Abstract; Figure 1; col. 18, lines 15-57).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have not filled the pores and to have rotated the template/mold employed by Cepak et al., as suggested by Moro et al., for the purpose, as

suggested by Moro et al, of producing a hollow article with smooth internal and external surfaces (Abstract).

As to claims 3 and 4, Cepak et al. also teach it is known to employ melts with template synthesis (Introduction).

As to claim 5, Cepak et al. teach the method set forth above, but do not teach the melt temperature. However, the temperature of the melt would have been readily determined and optimized depending on the polymer employed and the melt viscosity of the polymer at different temperatures, as is routinely practiced in the art.

As to claim 6, the polymeric melt would be cooled necessarily to produce a solidified final hollow tube.

As to claim 7, Cepak et al. employ a polymeric solution (Experimental Section).

As to claim 8, Cepak et al. teach the polymer is solidified by evaporation of the solvent (page 1364, first column).

As to claim 9, Cepak et al. disclose polymers with a molecular weight of 534,000 (Experimental Section).

As to claim 10, Cepak et al. teach the method set forth above, but do not teach the polydispersity as claimed. However, the polydispersity of the polymers employed would have been determined and optimized based upon the required properties of the final product, as is routinely practiced in the polymer art.

As to claims 12-15, Cepak et al. teach the solvent is evaporated. This is a phase transition process and meets the limitation of the claims as supported by the recitation of evaporation of a volatile component in claim 15 (page 1364, first column).

As to claim 17, Cepak et al. employ the same claimed process steps with the same claimed materials. Accordingly, the same claimed effects are realized.

As to claim 20, Cepak et al. teach the solvent is evaporated/extracted from the hollow fiber (page 1364, first column).

As to claims 21-28, Cepak et al. disclose the same template materials as those disclosed in the instant specification (e.g. alumina membrane). Accordingly, the examiner concludes that the templates have the same properties (page 1366, column 1).

As to claim 29, Cepak et al. disclose the same template materials and disclose that the solution is fed into one end and evaporated out of the other end (Experimental Section).

As to claim 30, Cepak et al. exemplify membranes with pore diameters of 1 um and 400 nm that produce hollow fibers. Accordingly, it necessarily follows that the wall thickness is less than the values recited in the claim.

As to claim 31, Cepak et al. disclose polystyrene, as well as various other polymers (Experimental Section).

As to claim 35, Cepak et al. dissolve the template (page 1364, second column) with a solvent.

Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cepak et al. (Preparation of Polymeric Micro- and Nanostructures Using a Template-Based Deposition Method, Chem. Mater, 1999, 11, 1363-1367), as applied to claims 1, 3, 4, 6-9, 12-15, 20, 21-31 and 35 above.

As to claim 5, Cepak et al. teach the method set forth above, but do not teach the melt temperature. However, the temperature of the melt would have been readily determined and optimized depending on the polymer employed and the melt viscosity of the polymer at different temperatures, as is routinely practiced in the art.

As to claim 10, Cepak et al. teach the method set forth above, but do not teach the polydispersity as claimed. However, the polydispersity of the polymers employed would have been determined and optimized based upon the required properties of the final product, as is routinely practiced in the polymer art.

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being obvious over Sneddon et al (US 6,478,994), as applied to claims 1, 2, 7, 8, 12-17, 20-35, above.

As to claims 9 and 10, Sneddon et al. teach the method as set forth above. Sneddon et al. do not teach the claimed molecular weight and polydispersity. However, Sneddon et al. teach that the viscosity of the solution is controlled as required and further teach that capillary action is employed to form the nanocylinders (col. 10, lines 3-50). Additionally, Sneddon et al. teach the molecular weight is varied based upon application (col. 6, lines 11-16). Accordingly, one having ordinary skill in the art would have readily optimized the molecular weight and polydispersity of the polymer to achieve a desired and suitable viscosity and capillary action, as is routinely practiced in the art.

As to claim 11, Sneddon et al. teach the crystallinity of the fiber may be controlled by temperature and further teach the temperature to use may be optimized. Therefore, it would have been prima facie obvious to one having ordinary skill to have determined the precise temperature to employ to achieve the desired crystallinity (col. 7, lines 27-57; col. 9, lines 51-54).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sneddon et al (US 6,478,994), as applied to claims 1, 2, 7, 8, 12-17, 20-35, above, in view of Moro et al. (US 5,292,515).

As to claim 18, Sneddon et al. teach the method as set forth above. Sneddon et al. do not teach rotating the template as claimed. However, Moro et al. teach a method of producing plastic cartridges (i.e. elongated cylindrical articles) having a relatively small diameter (col. 18, lines 38-57) wherein the mold (i.e. template) employed to form the cartridge is rotated at speeds of the order of 2150 rpm (Abstract; Figure 1; col. 18, lines 15-57).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have rotated the template/mold employed by Sneddon et al. as suggested by Moro et al., for the purpose, as suggested by Moro et al, of producing a hollow article with smooth internal and external surfaces (Abstract).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cepak et al. (Preparation of Polymeric Micro- and Nanostructures Using a Template-Based Deposition Method, Chem. Mater, 1999, 11, 1363-1367) in view of Moro et al. (US 5,292,515), as applied to claims 1, 3, 4, 6-9, 12-15, 17, 18, 20, 21-31 and 35 above, and further in view of either of Meckling (US 4,004,167) or Goodridge (US 3,607,998).

As to claim 19, the combination teaches the method of claim 18 as set forth above. Cepak et al. do not teach employing ultrasound to act on the liquid in the template. However, Meckling teach a method of rotational molding wherein particles contained within the matrix are subjected to ultrasonic action while the mold is rotated (Abstract; col. 10, lines 62-col. 11, line 11) and Goodridge et al. teach that ultrasonic means may be employed as a method of fusion for forming a hollow article (Abstract; col. 5, lines 56-75).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed ultrasonic action, as suggested by either of Meckling or Goodridge, on the liquid in the template of Cepak et al's method, for the purpose, as suggested by Meckling, that ultrasonic action facilitates movement of particles to desired locations during the molding process, and since Goodridge et al. suggest ultrasonic vibrations may be employed as an equivalent alternative means of fusing materials to produce hollow articles.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sneddon et al in view of Moro et al. (US 5,292,515), as applied to claim 18 above, and further in view of either of Meckling (US 4,004,167) or Goodridge (US 3,607,998).

As to claim 19, the combination teaches the method of claim 18 as set forth above. Sneddon et al. do not teach employing ultrasound to act on the liquid in the template. However, Meckling teach a method of rotational molding wherein particles contained within the matrix are subjected to ultrasonic action while the mold is rotated (Abstract; col. 10, lines 62-col. 11, line 11) and Goodridge et al. teach that ultrasonic means may be employed as a method of fusion for forming a hollow article (Abstract; col. 5, lines 56-75).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed ultrasonic action, as suggested by either of Meckling or Goodridge, on the liquid in the template of Sneddon et al's method, for the purpose, as suggested by Meckling, that ultrasonic action facilitates movement of particles to desired locations during the molding process, and since Goodridge et al. suggest ultrasonic vibrations may be employed as an equivalent alternative means of fusing materials to produce hollow articles.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Beck et al. (US 5,246,647) teach a melt method of producing hollow fibers with a diameter as low as 5 microns (col. 13, lines 12-28) wherein it is noted that the rate of cooling is critical for the success of the process (Abstract; col. 2, lines 49-col. 3, lines 12; col. 4, lines 50-68; col. 5, lines 48-63; col. 9, lines 3-48).

Dennis et al. (US 6,977,171) teach a method of producing nanotubes (Abstract; Figure 1; col. 5, lines 61-col. 6, lines 37) wherein template synthesis (col. 10, lines 62-col. 11, line 7) is employed and is described as being versatile and adaptable to other bulk material preparation methods (col. 7, lines 38-51; col. 8, lines 56-col. 9, lines 3) to produce metal, polymeric, and semiconducting nanotubes (col. 10, lines 3-29) of various shapes (col. 12, lines 47-65).

Dobo (US 4,222,977) teach a method of producing hollow inorganic fibers of metals Abstract; col. 1, lines 52-col. 2, lines 45; col. 4, lines 47-67; col. 8, lines 40-57; col. 10, lines 20-23; col. 11, lines 18-32; col. 12, lines 16-20).

Greiner et al. (US 6,667,099) teach that various additives and coatings may be applied in the production of nanotubes to achieve desired results and products.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Wollschlager whose telephone number is 571-272-8937. The examiner can normally be reached on Monday - Thursday 7:00 - 4:45, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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JW

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